

REMARKS

The enclosed is responsive to the Final Office Action mailed on November 3, 2009. At the time the Examiner mailed the Office Action claims 1, 2, 14-21 and 23 were pending. By way of the present response Applicant has amended no claims, no claims have been canceled, and no new claims have been added. As such, claims 1, 2, 14-21 and 23 are now pending. Applicant respectfully requests reconsideration of the present application and the allowance of all claims now presented.

Claim Rejections - 35 U.S.C. § 103

Claims 1-2, 9-14, 16-19, and 23

The Examiner has rejected claims 1-2, 9-14, 16-19, and 23 under 35 U.S.C. § 103(a) as being unpatentable over *Gorczyca et al.* (U.S. Publication No. 2002/0094686 A1) in view of *Boggs* (U.S. Patent No. 6,087,191). In particular, the Examiner asserts that silicon oxide and zirconium oxide are equivalent materials. Applicant disagrees and submits that one of ordinary skill in the art would not have modified *Gorczyca et al.* as proposed because silicon oxide and zirconium oxide are not equivalent materials, and such a modification could render the quartz bodies of *Gorczyca et al.* unsuitable for their intended purpose.

Gorczyca et al. discloses a process in which a silicon film is deposited onto and partially fills a trench in a roughened quartz body (e.g. a boat). The silicon film is then converted into silicon dioxide to completely fill the trench in the quartz body. In this manner, crack propagation due to surface stresses associated with prolonged periods of use in an LPCVD furnace is reduced.

Applicant respectfully points out to the Examiner that the fact that the trenches of the quartz body (i.e. silicon oxide) are filled with silicon oxide is of the utmost importance. The quartz bodies of *Gorczyca et al.* are exposed to significant thermal cycles during prolonged periods of use in an LPCVD furnace, and the coefficient of thermal expansion (CTE) of the material filling the trenches plays a significant role in the lifetimes of the quartz bodies. The

specific method disclosed in *Gorczyca et al.* fills the trenches of the quartz bodies with a silicon oxide having an equivalent CTE.

Boggs discloses a method for repairing scratches formed in a substrate during a polishing operation. *Boggs* provides list of materials, including silicon oxide and zirconium oxide, as being dissolvable in a hydrothermal steam so that they can be deposited into the scratches as a fill material.

The Examiner suggests to replace the silicon oxide material in the trenches of the quartz bodies of *Gorczyca et al.* with the zirconium oxide of *Boggs* because they are both dielectric materials. Applicant disagrees and submits that silicon oxide and zirconium oxide are not equivalent materials, and such a modification could render the quartz bodies of *Gorczyca et al.* unsuitable for their intended purpose. For example, one of ordinary skill in the art would understand that fused silica (SiO₂) has a negligible CTE of 0.5×10^{-6} while zirconium oxide has a CTE of 10.0×10^{-6} . Such a difference in CTE could cause crack propagation rather than protect the quartz bodies of *Gorczyca et al.* from crack propagation thereby rendering them unsuitable for their intended purpose.

Therefore, Applicant respectfully submits that the invention claimed in claims 1-2, 9-14, 16-19, and 23 is not obviated by the disclosures of *Gorczyca et al.* in view of *Boggs* and Applicant respectfully requests the withdrawal of the rejections of the claims under 35 U.S.C. § 103(a).

Claims 4 and 15

The Examiner has rejected claims 4 and 15 under 35 U.S.C. § 103(a) as being unpatentable over *Gorczyca et al.* and *Boggs* as applied to claim 1, in view of *Choi* (U.S. Patent No. 6,833,279 B2). In particular, the Examiner asserts that silicon oxide and yttrium oxide are equivalent materials. Applicant disagrees and submits that one of ordinary skill in the art would not have modified *Gorczyca et al.* as proposed because silicon oxide and yttrium

oxide are not equivalent materials, and such a modification could render the quartz bodies of *Gorczyca et al.* unsuitable for their intended purpose. For example, one of ordinary skill in the art would understand that fused silica (SiO_2) has a negligible CTE of 0.5×10^{-6} while yttrium oxide has a CTE of 8.1×10^{-6} . Such a difference in CTE could cause crack propagation rather than protect the quartz bodies of *Gorczyca et al.* from crack propagation thereby rendering them unsuitable for their intended purpose.

Therefore, Applicant respectfully submits that the invention claimed in claims 4 and 15 is not obviated by the disclosures of *Gorczyca et al.* in view of *Boggs* and *Choi*, and Applicant respectfully requests the withdrawal of the rejections of the claims under 35 U.S.C. § 103(a).

Claims 5-8, 20, and 21

The Examiner has rejected claims 5-8, 20, and 21 under 35 U.S.C. § 103(a) as being unpatentable over *Gorczyca et al.* and *Boggs* as applied to claim 1, and further in view of *Kowalsky et al.* (U.S. Patent No. 6,861,101 B1) and *Choi*.

It is Applicant's understanding that *Kowalsky et al.* discloses a plasma spray method. Applicant respectfully submits that *Kowalsky et al.* does not remedy the deficiencies of the proposed modification of *Gorczyca et al.* in view of *Boggs* and *Choi* as discussed above.

Therefore, Applicant respectfully submits that the invention claimed in claims 5-8, 20, and 21 is not obviated by the disclosures of *Gorczyca et al.* in view of *Boggs*, *Kowalsky et al.* and *Choi*, and Applicant respectfully requests the withdrawal of the rejections of the claims under 35 U.S.C. § 103(a).

Pursuant to 37 C.F.R. § 1.136(a)(3), applicant(s) hereby request and authorize the U.S. Patent and Trademark Office to (1) treat any concurrent or future reply that requires a petition for extension of time as incorporating a petition for extension of time for the appropriate length of time and (2) charge all required fees, including extension of time fees and fees under 37 C.F.R. §§ 1.16 and 1.17, to Deposit Account No. 02-2666.

Respectfully submitted,

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